MULTIMEDIA UNIVERSITY ®

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2022 / 2023

BBA3034 – BUSINESS ANALYTICS

(All sections / Group)

5th OCTOBER 2023
9 a.m. – 11 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 2 pages (excluding cover page) with 4 Questions only.

2. Attempt **ALL** questions. The distribution of the marks for each question is given.

3. Write your answers in the Answer Booklet.

QUESTION 1 [10 Marks]

MAS is the national carrier for Malaysia and carry 40,000 passengers daily with connectivity to 1,000 destinations in over 170 territories and access to over 650 airport lounges worldwide. You have just joined the organisation as an intern and have been asked by your Manager to make a presentation on Business Analytics and Machine Learning as follows:

a. Present to the management what is Business Analytics and why is it important for an airline company? (2 marks)

b. Illustrate THREE (3) business problems in airlines and the machine learning techniques that can be used to address them (6 marks)

c. Demonstrate TWO (2) challenges in implementing Business Analytics? (2 marks)

QUESTION 2 [10 Marks]

LalaMover is a company that provides on-line delivery services. It receives hundreds of emails, SMS and whatsapp messages from their customers every day. It is looking for a system to categorise the messages automatically into subjects such as "Delays", "Price", "Compliment", "Driver attitude", "Food Quality" so that the messages can be forwarded to the appropriate staff for action.

a. Two machine learning models being considered are Random Forest Tree and Navie Bayes Classifier. Show your understanding for each of these machine learning models. (5 marks)

b. Assess each of the two machine learning models and present your recommendation and reason to the management which model is more appropriate. (5 marks)

Continued ....

QUESTIONS 3 [15 marks]

a. Assess which is "worse": false positives or false negatives. Explain what is false positive and false negative. Give your reasoning which is "worse".

(3 marks)

b. The evaluation metrics for classification machine learning algorithms are:

I. Accuracy
II. Precision
III. Recall
IV. F1 Score

For each of the evaluation matrix, demonstrate your understanding by explaining them and how they are calculated.

(8 marks)

c. Assess which evaluation metric should be used for situations in which false positives are preferred to false negatives. (4 marks)

QUESTION 4 [15 marks]

These are the rule results from a market basket analysis.

i) Yogurt → whole milk (support = 0.03, confidence = 0.28, lift = 2.28)
ii) Citrus fruit → other vegetables (support = 0.03, confidence = 0.29, lift = 3.02)
iii) Pip fruit → whole milk (support = 0.03, confidence = 0.20, lift = 2.02)
iv) Roll/buns → whole milk (support = 0.03, confidence = 0.23, lift = 2.04)

a. For each of the following terms below, present your explanation (including their calculation formulae) and illustrate based on the results above.

(12 marks)

I. support,
II. confidence
III. lift

b. Assess which rule is the most useful and explain why. (3 marks)

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